Novel Method for Harvesting Energy from Fusion Reactions - Ripples of Self-Replicating Light Controlled Magnetically and Shunted to Photocathodes Composed of Novel High-Endurance Photovoltaic Quartz-Diamond Hybrid Crystals

7 November 2023
Simon Edwards
Research Acceleration Initiative

Introduction

Of the many engineering challenges that must be overcome in order to generate electricity from a fusion reaction, with the problem of generating the fusion reactions in and of themselves now effectively resolved, the challenge of converting heat energy from a fusion reaction into electrical power must now be overcome.

The Quark-Gluon-Odderon-Plasma (QGOP) that makes sustainable fusion reactions possible must be prevented from contacting the walls of toroidal fusion chambers in order to prevent damage to those chambers. Current prototypes call for the use of thermoelectric components in order to convert heat energy into electrical energy, but this approach would be extremely inefficient given the frequency with which the thermoelectric components would need to be replaced as a result of corrosion from bombardment by electrons.

Rather than deliberately bringing about the heating of thermoelectric plates via contact with the QGOP, a novel approach may make it possible to extract energy from the QGOP without any electron contact with either the walls of the chamber or the cathodes.

Abstract

Under the extreme conditions within the QGOP, LASER light injected into the chamber may be made to undergo a process of spontaneous emission/duplication similar to that seen in Free Electron LASERs. Crucially, this process would technically entail a photon-to-electron-to-photon conversion process to which high-temperature plasmas are well-suited. While a primary magnetic field would, under this regime, continue to be used to confine the QGOP and prevent its contact with the walls, a secondary magnetic field would be used to finesse injected light so that light, after it has undergone amplification by spontaneous emission induced by the turbulation of individual photons with respect to one another, can be consolidated into ripples (filaments) which are pushed toward the edge of the toroidal chamber. As these ripples pass over pristine (hot) sections of QGOP, their amplitude would increase dramatically, with the temperature of the QGOP dipping slightly with each ripple of light that migrates through that particular section of the QGOP. These photons, now carrying more energy than they possessed upon entering the chamber, would be made to come

into contact with what may be termed a photocathode that leads to a high-endurance crystalline photovoltaic unit.

As only light would be permitted to exit the toroidal chamber, the corrosion of the chamber and the mechanism for the conversion of heat energy into electrical energy would no longer be a concern. Any residual electrons associated with photon-electron-photon back-conversion would be tolerated by the quartz-diamond skyrmion lattice-based photovoltaic crystal, a fact which sets hypercondensed crystal photovoltaics apart from other PV classes heretofore explored.

The more light is injected into the QGOP, the greater the amplifying effect upon the light but the more the light would tend to interfere with the fusion reaction. Condensing the injected light into ripples or filaments that are constantly moving like waves toward the shore in the direction of the photocathodes around the perimeter of the toroidal chamber would prevent any "stalling" of the continuous fusion reaction and could also be used to modulate the fusion reaction in order to prevent it from running "too hot." The addition of the light to the reaction, not only serving as a medium from the extraction of energy, may additionally prove useful for rendering the fusion reaction more sustainable as sustained fusion reactions, much like combustion reactions, depend upon a "flow" of fuel and constantly shifting conditions in order to sustain a reaction. When conditions are overly stable in a combustion reaction, the result is smoldering. The injection of light and its consolidation into ripples which are pushed through the QGOP, acting as "energy squeegees" brings about an energy siphon effect that may enhance the overall fusion reaction not unlike fanning the flames of a fire.

Conclusion

Provided that an energy-efficient means of generating the injected light is utilized and provided that an efficient photovoltaic crystal such as that described in the publication of 3 November 2023 is utilized, it should be possible to achieve a sustained fusion reaction both without corroding the chamber used to contain that reaction and to extract useful energy from that reaction *well in excess* of that used to initiate that reaction.